

## **AMENDMENTS**

### **Amendments to the Claims:**

1. (Previously Presented) An apparatus for developing failure prediction software for a storage system, comprising:
  - an editor to assist a user in generating a failure prediction algorithm comprising fuzzy logic rules, the failure prediction algorithm stored in a natural language format;
  - a code generator to generate machine-readable code from the stored failure prediction algorithm in response to user input;
  - a test module to test the machine-readable code with sample data to produce a result in response to user input; and
  - a revision module to allow revisions of the failure prediction algorithm in response to user input such that the result corresponds to an expected result.
2. (Original) The apparatus of claim 1, wherein the fuzzy logic rules comprise linguistic variables having less than four terms.
3. (Previously Presented) The apparatus of claim 1, wherein the test module further tunes the failure prediction algorithm by adjusting a fuzzy variable definition in response to user input.
4. (Original) The apparatus of claim 1, wherein the machine-readable code is configured to execute on a storage system.

5. (Previously Presented) The apparatus of claim 1, wherein the revision module comprises a text editor to revise the failure prediction algorithm in response to user input.

6. (Original) The apparatus of claim 1, wherein the fuzzy logic rules are defined by conditional statements that include subjects, adjectives, and verbs familiar to personnel in the storage system field.

7. (Previously Presented) An apparatus for predicting component failure within a storage system, the apparatus comprising:

- a performance monitor to gather performance data for a storage system;
- a processor to execute a failure prediction algorithm on the performance data to produce a result, the failure prediction algorithm comprising fuzzy logic rules;
- a determination module to selectively forecast failure of one or more components of the storage system in response to the result; and
- an interface to adjust a predefined quality threshold of the determination module in response to user input, thereby adjusting the degree of data loss risk and remedial costs associated with a forecasted failure of one or more components.

8. (Canceled)

9. (Currently Amended) The apparatus of claim 8 7, further comprising an interface to adjust a fuzzy variable definition to tune the failure prediction algorithm in response to user input.

10. (Original) The apparatus of claim 9, further comprising a pre-processor to pre-process performance data to provide input data for the failure prediction algorithm.

11. (Previously Presented) The apparatus of claim 10, wherein the determination module maps the result from the failure prediction algorithm to one of a plurality of predefined recommendations.

12. (Previously Presented) The apparatus of claim 11, further comprising a notification module to produce a notification in response to the result.

13. (Previously Presented) A system for predicting component failure within a storage system, the system comprising:

a controller to control and manage data transactions with a host;

a communication module to exchange data between the host and a storage media;

a drive mechanism to read data from the storage media and write data to the storage media; and

an analysis module to execute machine-readable code programmed to selectively predict failure of the storage media and the drive mechanism in response to a result from a failure prediction algorithm comprising fuzzy logic rules and performance data associated with the storage media and the drive

mechanism, the machine-readable code comprising an interface to selectively adjust a fuzzy variable definition to tune the failure prediction algorithm in response to user input.

14. (Canceled)

15. (Currently Amended) The system of claim 14 13, wherein the machine-readable code further comprises a pre-processor to pre-process performance data to provide input data for the failure prediction algorithm.

16. (Previously Presented) The system of claim 15, wherein the machine-readable code further comprises a determination module to map a result from the failure prediction algorithm to one of a plurality of predefined recommendations.

17. (Previously Presented) The system of claim 16, wherein the machine-readable code further comprises a notification module to produce a notification in response to the result.

18. (Previously Presented) A method for developing failure prediction software for a storage system, the method comprising:

generating a failure prediction algorithm comprising fuzzy logic rules, the failure prediction algorithm stored in a natural language format;  
generating machine-readable code from the stored failure prediction algorithm;  
testing the machine-readable code to produce a result; and  
selectively revising the failure prediction algorithm such that the result corresponds to an expected result.

19. (Original) The method of claim 18, wherein the fuzzy logic rules comprise linguistic variables having less than four terms.

20. (Original) The method of claim 18, wherein certain linguistic variables comprise less than three terms.

21. (Original) The method of claim 18, further comprising tuning the failure prediction algorithm by adjusting a fuzzy variable definition.

22. (Original) The method of claim 18, wherein the machine-readable code is configured to execute on a storage system.

23. (Original) The method of claim 18, further comprising revising the failure prediction algorithm by way of a text editor.

24. (Original) The method of claim 18, wherein the fuzzy logic rules are defined by conditional statements that include subjects, adjectives, and verbs familiar to personnel in the storage system field.

25. (Previously Presented) A method for predicting component failure within a storage system, the method comprising:

gathering performance data for a storage system;

executing a failure prediction algorithm on the performance data to produce a

result, the failure prediction algorithm comprising fuzzy logic rules;

tuning the failure prediction algorithm by adjusting a fuzzy variable definition;

and

selectively forecasting failure of one or more components of the storage system in

response to the result.

26. (Canceled)

27. (Original) The method of claim 25, further comprising mapping the result to one of a plurality of predefined recommendations.

28. (Original) The method of claim 25, further comprising producing a notification in response to the result.

29. (Original) The method of claim 25, further comprising pre-processing performance data to provide input data for the failure prediction algorithm.

30. (Previously Presented) An apparatus for developing failure prediction software for a storage system, comprising:

means for generating a failure prediction algorithm comprising fuzzy logic rules,

the failure prediction algorithm stored in a natural language format;

means for generating machine-readable code from the stored failure prediction

algorithm;

means for testing the machine-readable code to produce a result;

means for selectively revising the failure prediction algorithm such that the result

corresponds to an expected result.

31. (Original) The apparatus of claim 30, wherein the fuzzy logic rules comprise linguistic variables having less than four terms.

32. (Original) The apparatus of claim 30, further comprising means for tuning the failure prediction algorithm by adjusting a fuzzy variable definition.

33. (Original) The apparatus of claim 30, wherein the machine-readable code is configured to execute on a storage system.

34. (Original) The apparatus of claim 30, further comprising means for revising the failure prediction algorithm by way of a text editor.

35. (Original) The apparatus of claim 30, wherein the fuzzy logic rules are defined by conditional statements that include subjects, adjectives, and verbs familiar to personnel in the storage system field.

36. (Previously Presented) An article of manufacture comprising a program storage medium readable by a processor and embodying one or more instructions executable by a processor to perform a method for developing failure prediction software for a storage system, the method comprising:

- generating a failure prediction algorithm comprising fuzzy logic rules, the failure prediction algorithm stored in a natural language format;
- generating machine-readable code from the stored failure prediction algorithm;
- testing the machine-readable code to produce a result;

selectively revising the failure prediction algorithm such that the result corresponds to an expected result.

37. (Original) The article of manufacture of claim 36, wherein the fuzzy logic rules comprise simple conditional statements that include subjects, adjectives, and verbs that are commonly used to describe error conditions of a storage system.

38. (Original) The article of manufacture of claim 37, wherein the method further comprises tuning the failure prediction algorithm by adjusting a fuzzy variable definition.

39. (Original) The article of manufacture of claim 38, wherein the method further comprises revising the failure prediction algorithm by way of a text editor.

40. (Original) The article of manufacture of claim 39, wherein revising the failure prediction algorithm comprises adding fuzzy logic rules to the failure prediction algorithm.